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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)	
03226/936001; P8316	

Application Number	Filed
10/679,559-Conf. #3291	October 6, 2003

First Named Inventor	
Alexander T. Garthwaite	

Art Unit	Examiner
2187	J. R. Golden

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant /inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [x] attorney or agent of record. Registration number 46,479
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____

Signature

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June 7, 2007
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

[x] *Total of 1 forms are submitted.

OIPE JUN 07 2007 PATENT & TRADEMARK OFFICE

Docket No.: 33226/936001; P8316
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Alexander T. Garthwaite

Confirmation No.: 3291

Application No.: 10/679,559

Art Unit: 2187

Filed: October 6, 2003

Examiner: J. R. Golden

For: CONCURRENT NON-INTRUSIVE PROCESSING OF A CARD TABLE SUMMARIZING MODIFIED REFERENCE LOCATIONS

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Objections to the Drawings

The Examiner objects to the drawings as failing to show every feature of the invention specified in the claims. Specifically, the Examiner asserts that the drawings fail to show "moving on to another group of memory sections distant from the next scheduled group." However, 37 CFR § 1.83(a), as cited by the Examiner, specifically requires that *any structural detail* that is *essential for a proper understanding* of the disclosed invention should be shown in the drawing. (*see* final Office Action mailed on February 7, 2007, p. 2, MPEP 608.02(d) and *Ex parte Good*, 1911 D.D. 43, 164 O.G. 739 (Comm'r Pat. 1911)). Said another way, 37 CFR § 1.83(a) does *not* require *every element* and clearly not *every word or phrase* referred to in the claims be shown explicitly.

The "next scheduled group" recited in the claims refers to the next car in the train algorithm that is supposed to be evacuated and reclaimed (*see* pages 22-25 and Figures 12A-12J of the Specification). The Applicant respectfully asserts that the specification adequately

describes the features and, particularly the drawings, provide any *structural* detail that is essential for a proper understanding of the disclosed invention. Accordingly, the Applicant asserts that additional graphical depiction of the collector "moving on to a memory section distant from the next scheduled group" when another application is executing in the next scheduled group in the drawings is not required, so the Examiner's objection is improper.

The only *structural* detail from the portion of the claim quoted by the Examiner that could possibly be required in the drawings is the memory section and scheduled group, both of which are shown in the drawings. Specifically Figures 5-7 and 16, for example, show memory sections and Figures 12A-12J, for example, show multiple cars that are collected in a scheduled order (*see* Figures 12A-12J including cars numbered 1.1., 1.2, 1.3, etc). Further, it is completely obvious to one with ordinary skill in the art when viewing Figures 12A-12J that the collector *cannot* perform garbage collection in an area of memory that is currently being executed in by another application. Although such a concept is not a *structural* detail required to be shown in the drawings, it is implicit from the drawings that a collector must necessarily be "moving on" to another memory section. In view of the above, the Applicant asserts that the drawings, as pending, satisfy the drawing requirements of the rules outlined in 37 C.F.R. § 1.83(a). Accordingly, withdrawal of the objection is respectfully requested.

Rejections under 35 U.S.C. § 112

Claims 1-14 and 22-28 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserts that that Specification does not include sufficient support for the limitation that updating the card table indicators or remembered sets of corresponding objects occurs in a *dirtied* memory section (*see* Office Action mailed February 7, 2007, page 4). Further, the Examiner argues that the Specification does not teach that "the card table indicators or remembered sets have a location

of at least one referencing object stored therein when they are updated" (*see* Advisory Action mailed April 18, 2007, Continuation Sheet).

An Applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, *structures, figures, diagrams*, and formulas that fully set forth the claimed invention. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997) (emphasis added). The subject matter of the claim need not be described literally (*i.e.*, using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement. *See*, MPEP §2163.02. While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through *express, implicit, or inherent* disclosure. *See*, MPEP §2163 (emphasis added).

Applicants respectfully assert support for the aforementioned limitation recited in the independent claims may is found expressly in the Specification. As described on the bottom of page 15 and on page 25 of the Instant Specification, a memory section becomes "dirtied" when the mutator adds or modifies a reference contained by a card. When a card is "dirtied" in this manner, the mutator makes a card-table entry to identify the "dirtied" card (*see* Specification, page 15, lines 28-30). Thus, scanning a "dirtied" memory section, by definition, involves scanning any memory section that contains an *added or modified reference*. Further, as objects are evacuated to different cars to reclaim memory spaces associated with an empty car (thereby resulting in objects being added to other cars), the card table indicator or remembered set is *updated* to reflect the address (*i.e.*, location) of the evacuated objects. That is, references that point to evacuated objects are updated to reflect the object's new location (*see* Specification page 22, line 22 – page 23, line 2, page 25, lines 11-17, and Figures 12A-12J (depicting the address updates made to each car's remembered set as the train algorithm progresses)).

To address the Examiner's argument that the Specification lacks sufficient written description describing that updating of the card table indicators or remembered sets occurs in a *dirtied* memory section, Applicant specifically points to Figure 8A, Step 104, which indicates that the garbage collector's first step is to scan dirty regions of memory for references to objects in cars. Further, in Step 114 of Figure 8A recites "process remembered set entry" and each of the steps performed to process a remembered set entry are shown in Figure 9. Specifically, Step 150 of Figure 9 states that a forwarding pointer is used to update a reference and the remembered set. Thus, in a *dirtied* memory area, one of the steps performed to process a remembered set entry is updating the remembered set, as recited in the independent claims. In addition, Figures 18-19, Steps 330, and Figure 20, Step 350, recite in part "scan cards that have dirty entries in V', updating RS's...," where RS's refers to "remembered sets". Clearly, Figures 18-20 provide support for updating remembered sets as recited in the independent claims of the present invention in *dirtied* memory areas.

Further, page 22, lines 3-6, of the Specification recites "[t]he next step is to process the next car, the one whose index is 1.2. Conventionally, this would not occur until some collection cycle after the one during which car 1.1 is collected. For the sake of simplicity we will assume that the mutator has not changed any references into the generation in the interim." And, page 24, lines 22-25 states "Of course, subsequent collection cycles will not in general proceed, as in the illustrated cycles, without any reference changes by the mutator and without any addition of further objects." Thus, it is clear that the explanation of Figures 12A-12J applies specifically to *dirtied* memory sections.

Further, to address the Examiner's argument that the Specification fails to sufficiently teach that updating card table indicators or remembered sets involves storing at least one location of referencing objects that reference the corresponding objects, Applicant respectfully

asserts that Figures 12A-12J, which describe the train algorithm in detail, teach storing addresses of referencing objects into remembered sets. In particular, for example, Figure 12A shows a remembered set (170) that includes memory locations (*i.e.*, 1.1, 1.2, 1.3, etc.) mapped to objects (*i.e.*, L, F, G, etc.), indicating that the objects are located at the memory locations specified in the remembered set. As described on page 21 of the Specification, with reference to Figure 12A, object A is referenced by object L, thus, the remembered set (170) contains a reference in object L recorded against car 1.1. Thus, a remembered set contains references of corresponding objects. As is clearly shown by figures 12B-12J, as cars are evacuated and objects are moved, the remembered sets of each car are updated by storing the *location of objects that reference corresponding objects*.

As cited above, the Specification is not required to reflect the exact language of the claims verbatim, but must expressly or inherently include sufficient *support* for the claim limitations. Applicant respectfully asserts that pages 22-25, Figures 12A-12J, and the description of Figures 8A and 9 of the Specification as described above, are sufficient to support the language of the independent claims. In view of the above, the Examiner has clearly failed to review the Specification as a whole in rejecting the present claims for lack of written description. Accordingly, a favorable decision from the panel is respectfully requested.

Dated: June 7, 2007

Respectfully submitted,

By _____

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